3. 0 SUMMARY OF STAGE 1A ACTIONS

Implementation of actions begins in Phase III. This period will include site specific environmental review and permitting as necessary. The first stage of Program implementation is critical to its long-term success because it will serve as an indication of the CALFED agencies and stakeholder community capacity to act on a cost-effective, practical, and equitable set of actions which advance the Program objectives.

The preliminary actions have been selected to provide a balanced suite of actions for the CALFED problem and solution areas. Initial Stage 1a actions also highlight certain critical ongoing programs which will require implementation decisions in the near future. The Stage 1a actions are summarized in Table 3.1 (Early Implementation Actions). The actions listed have been identified by CALFED program element and were selected to address initial goals and objectives of each program element. Included in the table is a brief description of each planned action and the primary effects or objectives of that action. The action numbering used in Table 3.1 was developed to be consistent with other action references and listing, such as the tables in Section 5 - Financing Plan. As such the numbering system is not a simple numerical list. Many of the listed actions will continue beyond Stage 1a. The Stage 1a actions are subject to revision, including modification, deletion, or addition of individual actions, based upon information developed during program implementation; available resources, including funding and personnel; and logistical considerations. Additional actions will be implemented as the program progresses in Stage 1.

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Ecosystem Restoration		
2	Initiate Ecosystem Science Program	Program to support the adaptive management element of the ERP. This will include science workshops, targeted research, assessment of relevant data and incorporation into the management process.	
4	Full Coordination and Funding Partnerships with other Ongoing Activities which Address Ecosystem Restoration in the Bay-Delta		
5a	Agricultural Diversions Screening Program	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995.	Reduce fisheries entrainment impacts
5b	Agricultural Diversions Extension and Screening -South Delta	As part of South Delta improvements extend ag intakes where necessary, with operable barriers in place, to meet local water supply availability needs.	Improve availability of water
5c	Evaluate the Need to Screen Small Diversions in the Delta and Implement Fish Screen Projects on Priority Diversions Upstream of the Delta	Consolidate and screen local ag diversions based on an appropriate priority and initiate a screen maintenance program, per Water Quality Control Plan, May 1995.	Reduce fisheries entrainment impacts
5d	Salmon and Steelhead Trout Genetic Management Program	Develop biological and genetic management plans to address restoration and recolonization of streams in the Central Valley by Chinook Salmon and Steelhead.	
5e	Hatchery Operations Program	Develop an integrated hatchery management strategy that reduces the potential conflict with wild fish, maintains a viable harvest strategy, and optimizes progress toward the goal of self-sustaining populations of wild, native fish.	Improve fish populations

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
5f	Hatchery Marking and Tagging Program	Develop and implement a comprehensive Implementation Plan for a statistically designed marking and tagging program for Chinook Salmon produced at Central Valley facilities consistent with existing programs throughout the West.	
5g	Coleman Hatchery Weir at Battle Creek	Repair and modify weir.	Improved fish passage
6a	Ecosystem Restoration Program: South Delta Region	Identify and advance specific regional ERP goals, coordinated with other facilities and operational changes.	Improve fisheries and wildlife habitat
6b	Flood Conveyance Improvements in Lower San Joaquin River System	Channel dredging, limited levee setbacks, and flood plain restoration in conjunction with ERP actions.	Improve levee integrity, channel conveyance, flood plain storage, fisheries and wildlife habitat
6c	Restore Tidal Marsh and Riparian Habitats along Georgiana Slough	The assumption is that improved habitat will decrease the diversion effect on fisheries.	Improve fisheries and wildlife habitat
6d	Suisun Marsh Diversion Screening Program	It is assumed that fish screens in this area will aid in the recovery of threatened or endangered fish species.	Reduce fisheries entrainment impacts
6e	Suisun Marsh Tidal Wetlands Restoration and Improve Levee Integrity	Evaluate and restore tidal wetlands. Based on willing participants.	Ecosystem, WQ, and levee integrity benefits
6f	Alternative Analysis and Implementation of Yolo Bypass Habitat	This is a portion of a general effort for flood bypass areas, including Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass. See # 6g	Improve diverse habitat, fish passage, and WQ
6g	Conduct a Needs and Opportunities Analysis for Achieving Ecosystem Restoration in Flood Bypasses	Areas include but are not limited to: Colusa Basin, Butte Basin, Sutter Bypass, Yolo Bypass, Chowchilla Bypass, Eastside, Fresno Slough, and James Bypass.	Improve diverse habitat, fish passage, and WQ

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
6h	Key Acquisition Areas for Conservation of Special Status Plant Species	Conduct reconnaissance level surveys of special status plants.	Identify key ecological attributes
6i	Propagation Techniques and Restoration Protocols for Special Status Plants		
6j	Develop a Long-Term Plan for In-Stream Flows	Formulate a science based method to determine instream flow needs.	Improve fisheries and wildlife habitat
6k	Develop Ecologically-based Hydrologic Models and Water Management Strategies	Develop modeling tools to support a comprehensive ecological water management strategy.	Improve fisheries and wildlife habitat
6l	American River Corridor Management Plan	Develop a corridor management plan.	
7	Sacramento River Meander Corridor	Continue studies and demonstration projects which address potential changes in hydrology and geomorphology, local economic impacts, and other issues associated with ongoing riparian restoration work.	
8	San Joaquin River Floodplain Corridor	Implementation of components of Comprehensive Flood Control Study.	
9a	Frank's Tract and other Flooded Island Habitat Restoration	Further evaluate and restore portions of Frank's Tract to provide for channel islands and tidal wetland habitat using clean dredge materials and natural sediment accretion. Combine the habitat restoration with a program to control or eradicate nuisance aquatic plants.	Create shallow water habitat, riparian
9b	Dredged Materials Reuse	Pilot studies and implementation, as materials and appropriate opportunities become available.	Materials for habitat, levees
9c	In-Channel Islands Restoration	Preserve, restore, and recreate habitat critical to recovery of listed plants.	Tidal wetlands, riparian habitat, special status species

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
9d	ERP Levee Relocations, Berms, Veg. Management	Cost included with In-Channel Island Restoration.	Delta Shallow Water, tidal wetlands, and riparian habitat
10	Environmental Water Acquisitions	Upstream flow enhancement.	Protection and recovery of fish
11a	Environmental Water Account	Establishment and administration of EWA, develop accounting process and rules for storing, conveying, and borrowing EWA water. EWA will also obtain water by SWP pumping of (b)(2)/ERP Upstream Releases, use of Joint Point of Diversion, E/I ratio flexibility, and 500 cfs SWP pumping increase.	Protection and recovery of fish while maintaining south Delta diversions
11b	Seek to Provide Water for San Joaquin River Flows to Meet WQ, VAMP, ESA, and Other Flow Objectives Through Water Purchases/Transfers from Willing Sellers.	Component of EWA. See # 11a	Increased instream flows during significant periods
13	Nonnative Invasive Species Management	Demonstration projects. This action is part of an ecosystem-wide effort to control non-native invasive species with early emphasis on the Delta and the Bay.	
14	Environmental Education Programs	Programs designed to develop a broader understanding of natural resource conservation issues at the individual and community level.	Increase public awareness
15	Program Administration	The restoration component of the overall CALFED Program has increased substantially requiring the infusion of additional staff and related costs which is greatly above the existing project administration level.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
16	Sediment Management Plans	Develop a sediment management plan that includes evaluating coarse and fine sediment transport and the need to augment gravel supplies, and is consistent with efforts to restore the Tuolumne River corridor.	Create maintain spawning habitat, help aquatic production
17a	Butte Creek Restoration	Complete barrier removal aspect of the Butte Creek Restoration.	Improve ecosystem health
17b	Deer Creek Restoration	Reintroduction of flood plain processes.	Improve ecosystem health
17c	Clear Creek Restoration		Improve ecosystem health
17d	Tuolumne River Restoration Implementation Actions	The Tuolumne River has been identified as a large scale demonstration stream in the ERP.	
17e	Cosumnes River Restoration		Improve ecosystem health
17f	Habitat Development Along the Mokelumne River Corridor	This action will contribute to establishment of a Mokelumne River Corridor. Acquire and convert land for shallow water, wetland, and riparian habitat.	Flood control and habitat creation w/ breached levees

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Water Use Efficiency		
18	Financial Incentive Program- Urban, Ag, and Managed Wetlands	Local assistance (loans & grants) for cost effective water conservation/recycling actions, low interest loans. Develop Urban Water Management Plan Certification process, implement urban BMP Certification process, develop agricultural reference conditions, and work cooperatively with AWMC.	Reduce demand
19	Recycling Financial Incentive Program	Local assistance (loans & grants) for cost effective water conservation/recycling actions, low interest loans.	Reduce demand
20	Technical Assistance- Urban, Ag, and Managed Wetlands	Expansion of existing technical and planning assistance programs; Recoverable loss studies, on farm conservation studies. Finalize and implement methodology for refuge water management.	Reduce demand
21	Recycling Technical Assistance	Technical assistance and resolution of limitations on agricultural and urban water recycling.	Reduce demand
22	Research to Improve Water Use Efficiency Actions	Research ET.	
23	Directed Studies- Pilot Measurement Program	Pilot measurement program.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Water Transfers		
24a	Forecast and Disclose Available Capacity in Existing Facilities	Provide transfer proponents and forecasts regarding the potential availability of conveyance capacity.	Improved market efficiency
24b	Develop Predictable/Reliable Access to Excess State and Federal Conveyance Facility Capacity	Work with DWR/USBR to id and assess options to make capacity available for transfers. Then take to stakeholders.	Improved market efficiency
24c	Improve Instream Water Transfers Tracking Protocols	Develop accounting/tracking protocols for 1707 transfers; maintain consistency with other types of transfers.	Facilitate ERP Impl.; ensure water is meeting its purpose
25a	Streamline the Water Transfer Approval Process	Working with SWRCB, DWR, USBR to streamline approval processes including "per-certification" of certain transfers and expedited environmental review procedures. Convene stakeholder panel.	Improved market efficiency
25b	Develop Transferable Water Definitions for Various Types of Transfers	Develop definitions of transferable water for types of transfers that are of issue as identified in guidebook.	Improved market efficiency
25c	Clarify Carriage Water Requirements for Cross-Delta Water Transfers	Evaluate applicability of carriage water concept to transfers and develop consensus on methods to calculate it.	Improved market efficiency
25d	Establish Refill Criteria Policy for Reservoir Storage Based Water Transfers	Establish more consistent application of refill criteria. Facilitate discussion between SWRCB, DWR, and USBR.	Improved market efficiency
26a	Establish the California Water Transfer Information Clearinghouse and the On Tap Web Site	Clearinghouse will maintain web site and facilitate research and CALFED Agency Coordinations (long-term commitment).	Improved market efficiency

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
26b	Require Impact Analysis Disclosure for Water Transfers	Working with SWRCB, DWR, USBR to require transfer applicants to disclose socio-economic, groundwater, and cumulative impact assessments with approval applications. Several year effort. Requires agencies to adopt/modify existing requirements.	Provide more information to third-party interests

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Watershed Management		
27a	Watershed Assessment and Planning	Assist local watershed groups and government agencies to develop watershed plans through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS
27b	Watershed Project Development and Implementation	Assist local watershed groups and government agencies to develop and implement programs, projects and other community based watershed improvement activities through grants, directed actions training and technical support.	Manage land use, vegetation, and stream zones to reduce sediment, reduce stream flashiness, improve base flow, Reduce fire danger, reduce pathogens, and TDS
27c	Watershed Management Technical Assistance	Ensure adequate levels of technical assistance and scientific support to locally led watershed management programs.	Sound scientifically based watershed plans, and projects
28	Community Capacity Building	Fund the development of local education programs through communities, schools, and universities, non-governmental organizations, local agencies and watershed stewardship groups.	Increased awareness and understanding within communities of the importance of a healthy functional watershed
29a	Watershed Assessment, Monitoring and Information Sharing	Ensure that adaptive management can be applied at multiple scales (including site, project, and program) and across land ownerships by developing a suite of protocols to help track a wide range of watershed responses to change.	The program will have reliable data and information with to adaptively management the program, and program activities

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
29b	Watershed Assessment, Monitoring and Information Sharing	Support the expansion of an active network of watershed data and information to assist watershed programs to conduct effective watershed management, conservation and restoration activities.	Expanded capability of watershed managers to collect, store, retrieve and exchange data and information
29c	Watershed Management Program Oversight and Management	Insure adequate funding to conduct administrative, management, and oversight for the watershed program, within the framework of the overall CALFED oversight entity.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Water Quality		
	Environmental Water Quality		
34a	Cache Creek/Delta Mercury Source Control Projects	Divert stormwater around mercury waste sites.	Develop ways to reduce mercury transport to waterways
34b	Clear Lake Upper Watershed Mercury Remediation Actions	Divert stormwater and revegetate areas to reduce mercury loading.	Benefits to the ecosystem and public health
34c	Sacramento River Mercury Source ID and Control/Remediation Study	Identify and control sources of mercury in the Sacramento River Watershed.	Benefits to ecosystem
35	Pesticides BMP Development and Implementation	Assess the fate and transport of diazinon and chlorpyrifos; begin implementation to reduce water quality impacts, using BMP's.	Eliminate toxicity in receiving water
36	Trace Metals	Determine extent of copper contamination, review impacts of other metals.	
37a	Salinity Reduction	Conduct salinity reduction work in coordination with the San Joaquin Valley Drainage Program.	Reduce transport of salinity contaminants to San Joaquin River
37b	Reduce Impacts of Soils and Receiving Water During High Flow	Implement regional and on-farm drainage retention facilities and manage discharges.	Improve late season WQ in lower San Joaquin River, potential drinking water quality impact
38	Selenium	Includes research, evaluation of real-time management of selenium discharge, expanded source control, and coordination with other programs.	Reduce transport of selenium contaminants to San Joaquin River
39	Sediment Reduction/Organochlorine Pesticides		
40	Turbidity and Sediment	Includes erosion control BMPs, sedimentation basins, evaluation of use of head control structures on select tributary creeks, and analysis or river sediment loads.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
41	Stockton Dissolved Oxygen Study and Solution Alternatives	Evaluate and implement appropriate actions to improve San Joaquin River dissolved oxygen conditions.	Improve WQ in San Joaquin River in vicinity of Stockton
42	Toxicity of Unknown Origin	Participate in identifying toxicity of unknown origin and addressing as appropriate.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Drinking Water Quality		
43	Work cooperatively with Bay Area water suppliers as they develop a Bay Area Blending/Exchange Project	Preliminary investigation of the potential for blending of Sierra quality water to improve WQ for Bay Area urban water suppliers.	Improve sources of drinking water
44	Address Drainage Problems in the San Joaquin Valley	Includes funding for support of voluntary land retirement programs with a target of approximately 35,000 acres in Stage 1.	
45a	Source Control Program		Improve sources of drinking water
45b	Reduce TOC Contributions	Conduct evaluations, pilot programs, and full scale action to reduce TOC through control of algae, aquatic weeds, ag runoff, and watershed improvements.	
46	Delta Drinking Water Council	Support ongoing efforts of the Delta Drinking Water Council.	
47	Alternative Sources of Supply for Southern California (Southern California Blending)	Prefeasibility studies of the potential for water quality exchanges between San Joaquin Valley agricultural entities and Southern California water agencies.	
48	Treatment Technology Contributions	For industrial source control, advanced wastewater treatment, bromate control, and UV treatment/ozonation projects.	
49	Control Runoff into Aqueduct		
50	North Bay Aqueduct Intake	Study to examine an alternate point of intake for the NBA. Includes funding for watershed protection at Barker Slough.	
51a	Operational Improvements	Includes modeling, refinement studies, coordination with the water management strategy.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
51b	Study: Evaluate Recirculation Benefits and Impacts	If feasible, acquire from willing sellers water to recirculate to meet WQ and VAMP objectives.	Potential to improve water quality and meet VAMP flow requirements in lower San Joaquin River

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Levees		
52	Levees Subventions	Provide assistance to local levee maintaining agencies.	Levee System Integrity
53a	Levees Special Projects	Provide funding for levee maintenance for statewide benefits.	Levee System Integrity
53b	Identify Risks to Delta Levees and Develop a Risk Management Strategy	Evaluate potential risks and develop/implement a risk management strategy.	Levee System Integrity
53c	Dredged Materials Reuse	Develop BMPs for reuse. Institute a program for reuse of dredge materials to repair levees.	Materials for habitat, levees
54	Emergency Response Program	Refine existing emergency response capabilities.	Levee System Integrity
55	Suisun Marsh Levees Program	Complete necessary studies to decide how to proceed with Suisun Marsh Levees.	Ecosystem, WQ and flood control benefits

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Storage		
56a	Update Water Management Strategy	Assess new information on water management tools acquired through Program implementation. Update Water Management Strategy to reflect changes in statewide water management needs.	Improve Storage/CU utility
56b	Incentive Program for Groundwater Plans	Incentive program for groundwater management. Coordinate with conjunctive use program/incentives. Incentive dollars would not be through the Water Transfer Program.	Increase use of groundwater as a water management tool
57	Groundwater/CU Feasibility Studies with Local Sponsors	Provide support to local sponsors, id potential impacts, and allocate financial resources.	Improve Storage/CU utility
58	Groundwater/CU Programs: Develop and Impl. GW Monitoring, Modeling and Pilot Programs	Provide support to local sponsors, id potential impacts.	Improve Storage/CU utility
59	In-Delta Storage	Feasibility study of storage options in the Sacramento-San Joaquin Delta.	Water Quality/Operation Flexibility
61	Shasta Enlargement Feasibility Investigation	Begin necessary studies required to pursue expansion of reservoir by 300 TAF.	Water Quality/Operation Flexibility
63	Los Vaqueros Reservoir Enlargement Study	Begin necessary studies required to pursue expansion of reservoir by 400 TAF.	Water Quality/Operation Flexibility
65	North of Delta Off-Stream Investigation (Sites Reservoir)	Develop local partnerships and evaluate potential projects.	
66	Upper San Joaquin River Watershed Storage Study	Develop local partnerships and evaluate potential projects.	Improve Flood Control and Storage/CU utility
67	Power Facilities Reoperations Evaluation		Improve Storage/CU utility
68	Fish Migration Barrier Removal Evaluations	Analysis of options to facilitate fish passage.	Improve fish passage

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Conveyance		
69	Study Feasibility of Delta Cross Channel Reoperation	Complete DCC operational studies and water quality and fish effects studies for a screened through-Delta facility on the Sacramento River.	Balance water quality and fisheries benefits
70	On Sacramento River Test Diversion (Evaluate)		Balance water quality and fisheries benefits
71	North Delta Regional Flood Control/Ecosystem Restoration	Provide a coordinated regional solution to concerns in North Delta, including 100-year flood protection for the North and South Mokelumne Rivers.	Flood control and habitat creation w/ levee berms
72	Plan, Design & Construct CVP Tracy Test Fish Facility, 500 cfs screen, plus Sorting, Holding, Transport, and Release	New fish screens for Tracy Pumping Plant full export capacity to be completed by end of Stage 1.	Improve fish survival
73a	Plan, Design, & Construct new SWP Clifton Court Forebay Intake, Including Fish Screens and Salvage Facilities, Average Daily Capacity 10,300 cfs: New Screened Intake with Gates and Low Head Pumps		Improve fish survival, water supply flex. and reliability, drinking water quality stages, circulation, and water quality
73b	Implement Joint Point of Diversion	Allow SWP and CVP to shift allowable exports between pumping plants to minimize environmental impacts and improve operational flexibility and water supply reliability.	Operational flexibility, water for SWP and CVP
74	Feasibility and Environmental Study of SWP/CVP Interties Between Export Facilities and Canals	Based on results of this investigation, either construct intertie and add 4600 cfs screened export capacity to CCFB or build new screen and salvage facilities at Tracy Pumping Plant. Also evaluate intertie between Delta Mendota Canal and Cal. Aqueduct between Delta pumping plants and O'Neil Forebay.	Optimize efficiency and reliability

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
76a	Increase SWP Pumping to 8,500 cfs	Facilitate SWP export flexibility up to 8,500 with appropriate constraints.	Operational flexibility
76b	Increase SWP Pumping 500 cfs	At the start of Stage 1 increase SWP pumping by 500 cfs July through September.	Operational flexibility
76c	SWP 10,300 cfs Permits	Obtain permits to use full SWP capacity, consistent with all applicable operational constraints.	Increased operational flexibility for water supply and environmental benefits.
76d	Plan, Design, and Construct one or more Permanent Operable Barriers at Head of Old River, Middle River, Old River at Tracy, and/or Grant Line Canal	Phase out temporary barriers as the permanent barriers, dredging, and extension of local agricultural diversions and/or consolidation of agricultural intakes are completed.	Improve fish passage (HOR), and local water supply availability and quality (MR, ORT and GLC)
76e	Barrier Operations	Establish Barrier Operation Coordination Team, operate for fisheries, water quality, and water supply availability goals.	Improve availability of water of adequate quality and quantity to ag. diverter, contribute to restoring aquatic resources
76f	Channel Dredging of Selected Channel Segments	Dredge to limit scour velocities, for water supply availability, for navigation, and flood control. Costs shown are for design.	
76g	Monitoring	Monitor barrier effects on fish, stages, circulation, and wager quality to support real time ops and planning process. Also includes monitoring of new screened intake, new channel dredging, and modifications to ag intakes.	

Table 3.1. Early Implementation Actions

Action #	Action Description	Detail/Assumptions	Primary Effects
	Science Program		
77a	Monitoring, Assessment, and Research	Develop and implement the CALFED Science Program including monitoring, assessment research, and independent scientific review.	
77b	Hire an Interim Science Leader		
77c	Hire a Chief Scientist		
77d	Appoint an Independent Science Board and independent science panel for the EWA		
77e	Coordinate Existing Monitoring and Scientific Research Program		
77f	Refine the Set of Ecological, Operation, and other Predictive Models		
77g	Establish and Refine Performance Measures and Indicators		